

GP fundholding and the costs of prescribing

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Abstract

Background Medicines prescribed by general practitioners constitute a major item of National Health Service expenditure and evidence suggests that prescribing patterns vary considerably between practices. This study attempts to assess the impact of the introduction of fundholding on prescribing costs in one health authority.

Method Both time-series and cross-section data for Lincolnshire are analysed with a view to determining prescribing cost trends over time and identifying differences in characteristics which might explain why fundholding practices differ from non-fundholders in respect of prescribing costs.

Results Since the introduction of fundholding, Lincolnshire fundholders have clearly emerged as the low-cost prescribers. Cost economies are accomplished by prescribing fewer items per patient across the majority of prescribing chapters. Fundholders cannot be distinguished from non-fundholders in terms of environmental characteristics, such as the composition of practice lists, although there exist several significant organizational differences between fundholders and non-fundholders, for example, the use of computers in prescribing.

Conclusion In Lincolnshire, fundholders have been more successful than non-fundholders in meeting prescribing budget targets.

Introduction

Medicines constitute the single largest National Health Service (NHS) expenditure item after staffing. In 1992, 9.7 per cent of total NHS spending was accounted for by drug purchase, with over 80 per cent of this amount representing medicines prescribed by general practitioners (GPs). The White Paper which prefaced the 1990 NHS Act made explicit reference to GP prescribing as an issue of concern: 'Expenditure on medicines has grown on average by four per cent a year above the rate of inflation over the past five years' and the cost of the drugs is 'more than the cost of the doctors who wrote the prescriptions' (Ref. 2, p. 57). This having been said, the prescribing problem is not confined to the magnitude and growth of spending on medicines, because there is very clear evidence of substantial disparities in the cost of prescribing between localities. The average cost of dispensed prescriptions across the 90 English Family Health Service Authorities (FHSAs) in 1992-1993 varied between £46.1 and £83.1 per patient, around a mean of £65.7.3 Moreover, practice-by-practice variations also exist within the

various FHSAs, with low-spending practices in high-cost authorities regularly spending more than high-spending practices in low-cost authorities.

The NHS management's strategy for controlling prescribing cost growth and variations has included several elements. First, the contribution of generic prescribing to lowering drug costs was explicitly recognized by the introduction of the 'limited list' in 1985. The list constrained GPs' powers of prescribing drugs in certain therapeutic categories, and since 1990 its scope has been extended considerably. Second, from 1988, a centrally organized database of prescribing analysis and costs (PACT) became accessible to GPs, to allow them to monitor their own prescribing behaviour. Finally, and following the 1990 NHS Act, prescribing budgets for GPs have been gradually phased in, with a view to rationalizing drug spending. For non-fundholders these budgets are nominal or indicative, whereas for fundholders the real resources of the practice fund are at stake. Such budgets are negotiated between the practices and the health authorities, on the basis of PACT data, historical cost trends and practice forecasts.

Policies to moderate the size and scope of drug spending in general, and to limit individual variations in particular, only make sense in the light of an understanding of the causal mechanisms at work. GPs are required by the NHS to service the health care needs of the patients registered with their practice and it would therefore be possible to ascribe a particular pattern of drug costs purely to local 'environmental factors' over which the GP concerned has little control. For example, GP prescribing behaviour could be seen as being conditioned by the prevalence of illness in the GP's catchment area, and this, in turn, might be a function of the demographic and social structure of the practice's list of patients. A number of empirical studies have already concluded that certain environmental factors are particularly significant in explaining cost variations, for example, standardized mortality rates, population mobility, practice scores on relative deprivation indices and, especially, the demographic (agesex) structure of GP lists.

This having been said, it is also conceivable that individual practices might possess a certain degree of scope for discretion in prescribing, over and above any such environmental influences. Examples here could include the practice's chosen protocol for patient care, the use of practice formularies," the management structure of the practice, practice size and the quality of prescribing information regularly received. Although the findings reported by the studies cited above would appear to offer little potential for what might be termed the 'organizational explanation' of cost variations, it must be stressed that variations in discretionary GP behaviour would be unlikely to be evident at the aggregate level at which most of these studies have been conducted. At this aggregate level, practice-by-practice differences would be submerged in the FHSAs average.

Of greater significance to the present argument, however, is the fact that the studies cited were based on data collected before the advent of GP fundholding in 1991. Fundholding confers a far higher degree of financial and management autonomy upon those GPs who opt for, and are approved for, such a status, in comparison with non-fundholders. Data at the national level already confirm that the growth of prescribing costs in aggregate has recently been slower among fundholders than it has among non-fundholders.¹² This national trend has received confirmation from a study of a small sample of Oxford practices during the first year of fundholding.¹³ However, although the establishment of fundholding would certainly appear to offer scope for organizational explanations in prescribing cost variations, the hypothesis requires more extensive testing before its validity can be accepted. Furthermore, some identification of the causal mechanism is required. In other words, if fundholders really are cheaper than non-fundholders in terms of prescribing costs, exactly how are the economies being effected? The present paper reports on an analysis of all practices within a single English FHSA after the advent of fundholding, with a view to appraising the impact of fundholding on GP prescribing costs.

Materials and method

The area chosen for this study was Lincolnshire FHSA, over the period fiscal 1990–1991 (the year before the introduction of fundholding) to fiscal 1993–1994 (up to and including the third wave of fundholding). For the purposes of analysis, the practice population was divided into four cohorts, based upon practice size and status at the end of fiscal 1993–1994. These were, first, practices which had become fundholders during one of the first three waves ($n = 19$), second, singlehanded practices ($n = 21$) and third, large non-fundholders ($n = 11$), that is, practices which met the listsize criterion for fundholding but which, for whatever reason, did not attain fundholding status during the period. The remaining practices constituted the fourth cohort ($n = 54$), and are referred to as intermediate non-fundholders.

Prescribing costs are conventionally measured as net ingredient cost (NIC) per patient, i.e. the cost to the NHS of the drugs prescribed, excluding dispensing fees and any discounts offered. Time-series data on such costs revealed differential growth trends between the four cohorts, and these were subsequently explained with reference to comprehensive cross-section data on prescribing costs and individual practice characteristics for the calendar year 1993. Differences between characteristic means and proportions are assessed by *f*-tests at the 95 per cent significance level.

Results

Figure 1 displays the changes in per capita prescribing costs for the four cohorts over the four-year period. In the year before fundholding (fiscal 1990–1991), the difference in mean spending between those practices destined to become fundholding and those

large, nonfundholding practices with sufficient list-size to apply for fundholding status was insignificant. The mean per capita spending of both intermediate and single-handed practices was significantly larger than both that of fundholders and the large non-fundholders. In turn, single-handed practices spent significantly more than intermediate non-fundholders. By the end of fiscal 1993-1994, however, mean per capita expenditures for all three non-fundholding cohorts had become statistically indistinguishable, whereas fundholders had a mean expenditure significantly lower than that of all these cohorts. Table 1 presents results for the relevant statistical tests. It is accordingly evident that, in the year before fundholding, practice size was a reasonable predictor of prescribing costs in Lincolnshire. However, over the first three years of fundholding, the per capita expenditures of three non-fundholding cohorts have converged, i.e. spending differences which existed before fundholding have disappeared. However, this convergence among non-fundholders itself diverges from the spending growth path of fundholders.

Table 1 *T*-test probabilities for spending differences

	Large non-fundholders	Intermediate non-fundholders	Single-handed
Fundholders			
1990-1991	0.59	0.02	0.00
1993-1994	0.03	0.00	0.00
Large non-fundholders			
1990-1991	—	0.02	0.00
1993-1994	—	0.70	0.83
Intermediate non-fundholders			
1990-1991	—	—	0.05
1993-1994	—	—	0.84

Because NIC per patient is simply the product of cost per item prescribed and items prescribed per patient, differences in either or both of the latter could, in theory, account for the observed NIC differential between fundholders and non-fundholders towards the end of the period. In fact, for calendar 1993, the difference between mean NIC per item prescribed for fundholders, £7.45, and for non-fundholders as a whole, £7.15, was insignificant ($t = 1.58$, $df = 39.6$, $p = 0.12$), whereas the difference between the

average number of items prescribed per patient, 8.95 and 11-42, respectively, was highly significant ($t = -5.50$, $df=43$, $p = 0.00$). As Table 2 indicates, differences in the number of items prescribed per patient are observable at the level of the individual prescribing chapter. Fundholders prescribed significantly fewer items per patient for 14 of the 20 chapters, which together accounted for around 95 per cent of the total number of items prescribed for that cohort.

Having demonstrated that Lincolnshire fundholders are effecting economies in unit prescribing costs by issuing fewer items per patient than non-fundholders, it remains to be ascertained whether this trend might be ascribed to organizational or to environmental factors. Table 3 presents relevant data. The sub-set of characteristics termed 'environmental' are those over which it is supposed that the practice has little control. No significant differences emerge. Turning to the 'organizational' variables, the cohorts are distinguished by differential use of non-GP labour only in that fundholders employ fewer management hours per GP than do non-fundholders. Fundholding practices tend to be the more formally structured; a higher proportion of the fundholders operate their practice on the basis of a partnership agreement, a protocol for patient management and operations agreed by all partners.

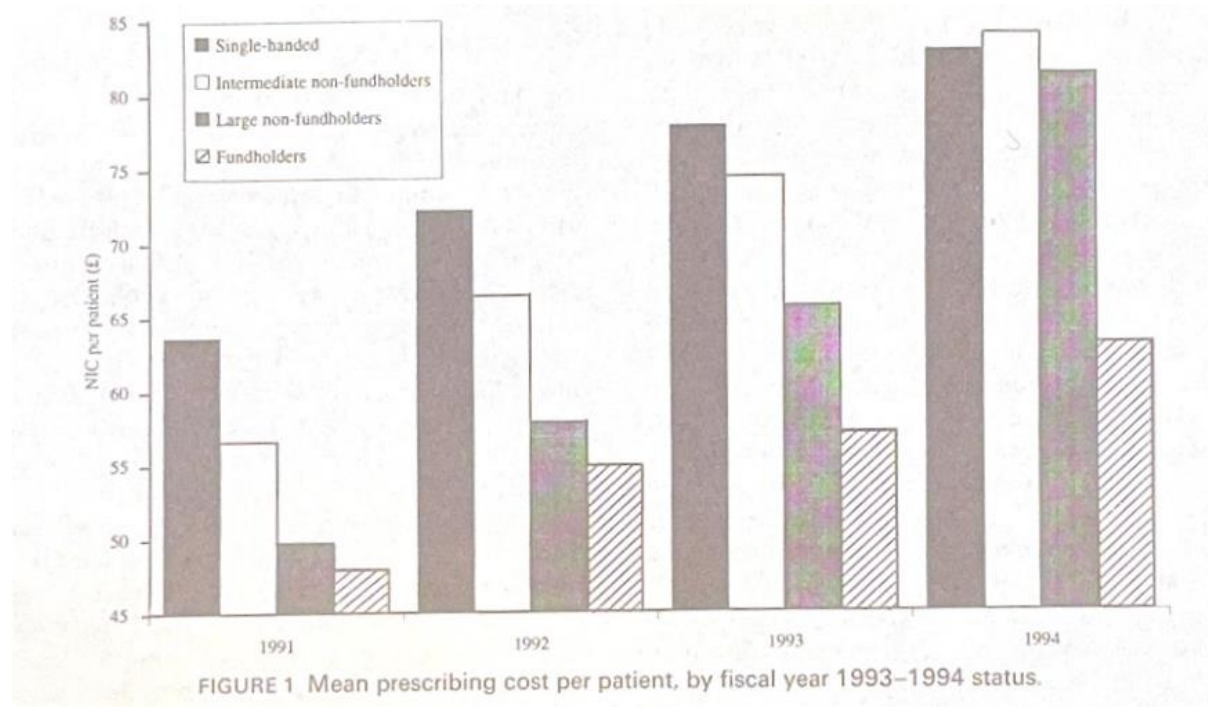


Table 2 Average number of items prescribed per patient, by chapter, 1993

Chapter	Fund-holders	Non-fund-holders	Difference between means	t-test significance
1 Gastro-intestinal system	0.80	0.99	−0.19	0.00
2 Cardiovascular system	1.64	2.23	−0.59	0.00
3 Respiratory system	0.83	1.09	−0.26	0.00
4 Central nervous system	1.57	2.12	−0.55	0.00
5 Infections	0.94	1.08	−0.14	0.02
6 Endocrine system	0.53	0.65	−0.12	0.00
7 Obstetrics, gynaecology, genito-urinary	0.30	0.27	−0.05	0.00
8 Malignant disease, immunosuppression	0.05	0.06	−0.01	0.03
9 Nutrition and blood	0.21	0.36	−0.15	0.00
10 Musculoskeletal and joint diseases	0.56	0.73	−0.17	0.00
11 Eye	0.23	0.25	−0.02	0.05
12 Ear, nose and oropharynx	0.18	0.22	−0.04	0.00
13 Skin	0.56	0.64	−0.08	0.00
14 Immunological products and vaccines	0.23	0.25	−0.02	0.52
15 Anaesthesia	0.02	0.03	−0.01	0.19
19 Other drugs and preparations	0.22	0.23	−0.01	0.16
20 Dressings	0.22	0.29	−0.08	0.02
21 Appliances	0.08	0.08	0.00	0.78
22 Incontinence appliances	0.03	0.03	0.00	0.96
23 Stoma appliances	0.03	0.03	0.00	0.73

Certain differences are manifest with respect to computers and information flow. Fundholders are far more likely than non-fundholders to use their computer both to monitor prescribing and to record practice morbidity data. A slightly higher proportion of GPs in fundholding practices subscribe to PACT level 3 data (the most detailed) although both groups make considerable use of computers to monitor repeat prescribing. Fundholders appear to prescribe more generic medicines. As fundholders' costs per item are not significantly lower than those of non-fundholders, however, this result would suggest either that the former are prescribing more expensive drugs or that they are prescribing longer courses of treatment. Finally, the data suggest that, in comparison with non-fundholders, the senior partner of a fundholding practice is older and the average age of the partnership is younger. Fundholders are typically inclined to operate fewer branch surgeries.

A parameter as yet unconsidered as an explanation for prescribing cost variation is the prescribing budget. For a non-fundholder this is merely a nominal target or indicative budget, whereas for fundholders real resources in the overall fund allocated to the practice are involved. Prescribing budgets have been set during the first three waves of fundholding. Although the precise methods of estimation of the budget have varied from one year to the next, the method has been independent of the status of the practice. Each year's budget has been based broadly on historic costs and projected needs in the coming year.¹⁴ Figure 2 displays the proportionate over-spend on the prescribing budget for the four cohorts over the three fiscal years since the introduction of fundholding. On average, it is only fundholders and single-handed practices which have succeeded in progressively limiting their over-spends.

Discussion

The data on the growth in prescribing expenditure suggest that, irrespective of the differences between the four practice cohorts which existed before the introduction of fundholding, there exists at present a clear distinction between fundholders and non-fundholders in terms of prescribing costs per patient. As observed above, the relatively lower costs of fundholders can be ascribed to their tendency to prescribe fewer items per patient across the majority of prescribing chapters. Interestingly enough, these chapters encompass most of the drugs which the Audit Commission has recently cited as being significantly over-prescribed or of limited clinical value.

It is especially noteworthy that the large practices with list-sizes sufficient to apply for fundholding status experienced the highest rate of cost increase over the period under investigation. This trend might explain either why such practices chose not to apply for fundholding status in one of the first three waves or, if they did apply, why they were refused such a status. Alternatively, one might favour a strategic explanation, along the following lines. If such practices were contemplating joining the fundholding scheme in a later wave, it would be prudent for them to deliberately engineer an increase in their

prescribing costs, especially in their preparatory year. This would serve to demonstrate the need for a high prescribing budget after obtaining fundholding status and such a high budget would facilitate the subsequent realization of savings. As a matter of record, six out of the 11 large nonfundholders were in their preparatory year in fiscal 1993-1994, and another so entered in 1994-1995. Our data are thus not inconsistent with the strategic explanation although they do not, of course, validate it. It should be noted that, even if such a strategy was being employed by the fourth-wave fundholders, the observed budgetary discipline of fundholders in earlier waves makes it unlikely that it was being employed in those cases.

Characteristic	Fund-holders	Non-fund-holders	Difference between means	t-test significance
Environmental				
List-size per GP	1961.42	1896.96	64.46	0.41
Proportion of list over 65 years of age (%)	18.78	18.35	0.43	0.63
Proportion of list which is male (%)	48.78	48.95	-0.17	0.78
List inflation owing to temporary residents (%)	7.43	7.19	0.24	0.83
Unemployment rate (%)	2.87	3.17	-0.30	0.24
Jarman score (UPAB)	5.53	6.39	-0.86	0.26
Proportion of list suffering permanent sickness (%)	3.75	3.99	-0.24	0.64
Proportion of list exempt from payment (%)	34.49	36.75	-2.26	0.45
Number of night visits made per GP	35.10	41.63	-6.53	0.22
Number of other practices within 1-mile radius	1.43	1.91	-0.48	0.24
Distance from practice to nearest hospital (miles)	7.41	7.18	0.23	0.85
Proportion of practices which are dispensing (%)	19.18	23.46	-4.28	0.49
Rural practice payment per GP (£)	426.33	479.52	-53.19	0.57
Proportion of list living >3 miles from practice	8.39	8.97	-0.58	0.74

Characteristic	Fund-holders	Non-fund-holders	Difference between means	t-test significance
Organizational				
Proportion possessing a formal partnership agreement (%)	89.47	66.67	22.80	0.05
Management hours employed per GP	1.48	1.10	0.38	0.33
Administrative staff hours per GP	16.32	15.16	1.16	0.57
Practice nurse hours per GP	9.68	8.08	1.60	0.42
Proportion using computer to monitor prescribing budget (%)	94.74	67.86	26.88	0.01
Proportion using computer to monitor repeat prescribing (%)	100.00	92.86	7.14	0.08
Proportion using computer to read all morbidity data (%)	94.74	67.86	26.88	0.01
Proportion using computer for audit (%)	94.74	67.86	26.88	0.01
Proportion receiving PACT level 3 prescribing data (%)	84.21	50.00	34.21	0.01
Proportion possessing a practice formulary (%)	47.37	35.71	11.66	0.27
Proportion of items prescribed generically (%)	43.00	36.60	6.40	0.14
Average age of senior partner (years)	47.32	47.56	-0.24	0.86
Average age of partners (years)	43.84	43.33	0.51	0.66
Proportion of partners who are male (%)	78.95	72.62	6.33	0.49
Number of branch surgeries	0.21	0.90	-0.69	0.03

The evidence suggests that fundholders and nonfundholders do not differ significantly with respect to environmental characteristics. Accordingly, the variation in spending between the two groups cannot be ascribed to the differential preponderance of factors already known to exert an influence on prescribing costs, for example, differences in average list-size, the demographic structure of the list, 1 permanent sickness and social deprivation and whether or not the practice is approved for dispensing.¹⁷ We may accordingly reject hypotheses along the lines that fundholders are favoured by having

patients on their lists who are, in some sense, healthier or easier to manage. As there appears to be no significant difference in the number of proximate rival practices, we might also discount the hypothesis that prescribing is related to the degree of competition for patients.

In contrast, the evidence points strongly to organizational differences between fundholders and non-fundholders. Fundholders generally possess superior information and patient management systems; indeed, this is not surprising in view of the fact that the possession of such systems is a necessary condition for the approval of fundholding status, and the award of the status allows the practice to claim sizeable management and computer subsidies.^{1s} The finding that fundholders employ less managerial time per partner is consistent with the view that larger practices are likely to be able to effect economies of scale in management,^{19,20} With respect to prescribing, however, the evidence on the use of nurses and other practice staff allows us to reject the hypothesis that fundholding GPs necessarily prescribe less because of greater surveillance time or access to modes of therapy other than medicines, for example, counselling. All such measures have been advocated as a means of controlling prescribing costs.²¹ Why fewer branch surgeries should be associated with lower prescribing costs is not intuitively obvious. It would be possible to argue that branch surgeries impose more problems for central monitoring and control, although it is more likely that the need for operating a branch surgery is related to the size of the practice. Being among the largest of all, fundholders perceive less need to run branch surgeries. In similar vein, no obvious explanation exists for the particular age structure of fundholding partnerships.

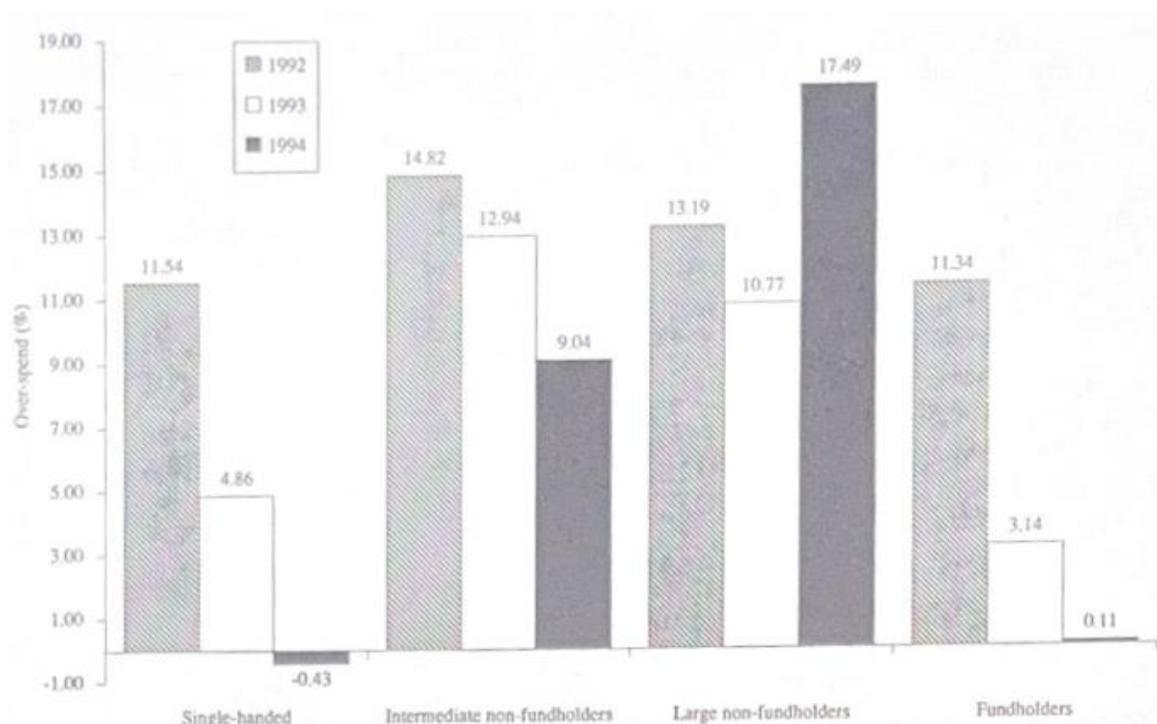


FIGURE 2 Proportionate over-spend on budget by fiscal year ending.

Fundholders on average have clearly been successful in constraining their prescribing costs to conform to their pre-specified budgets. Although it would seem plausible to hypothesize that the fact that real resources are involved is a powerful inducement to them to move in this direction, a move facilitated by their management and information structures, we should bear in mind that these practices had the lowest costs at the outset, before becoming fundholders. Their capacity to constrain cost growth in relation to other practices might not, therefore, be a sole consequence of their status as fundholders. At the other extreme, it appears that single-handed practices have been equally successful in constraining prescribing growth, although it must be remembered that the historic cost component of the budget-setting process would mean that this cohort have received the most generous budget targets in the past. Arguably, the achievement of a prescribing target is simpler, from the managerial point of view, in a single-handed practice than in a larger non-fundholding practice, because only one person is involved in the prescribing decision.

Finally, we must consider the extent to which the results of our analysis of Lincolnshire practices are generalizable nationally. If only by virtue of the fact that Lincolnshire FHSA recorded the highest prescribing cost per patient in England in 1992-1993, the area can hardly be considered typical.³ This fact should be counterposed against another, namely, that Lincolnshire is in a region (Trent) with one of the highest penetrations of fundholding in the country.²² Such data suggest that, at the FHSA level, a wide variety of factors, over and above fundholding, are likely to be relevant as prescribing cost determinants; indeed, this has already been shown in earlier studies. However, within any other given FHSA, it is not implausible to argue that the same relative trends could be expected. Fundholders might still emerge as being lower-cost prescribers than non-fundholders in that locality, even though they might remain expensive in comparison with non-fundholders in other localities. Obviously, a definitive answer to the generalizability question will only be possible when more locality studies have been undertaken.

Conclusions

On the basis of this study of fundholding in Lincolnshire, four conclusions may be drawn. First, practices in the first three waves of fundholding have significantly lower prescribing costs than non-fundholders. Second, the cost differential cannot be explained with reference to environmental differences between practices, although several organizational differences are evident. Third, it would appear that fundholders have been more successful than non-fundholders (with the exception of singlehanded practices) in meeting prescribing budgets. This is possibly because of both the implications of prescribing budgets for practice resources and the organization and management structures of fundholders. Finally, fundholders appear to secure their cost

economies by across-the-board reductions in items per patient prescribed, rather than via the prescription of cheaper medication.

This paper has confined itself to a discussion of prescribing costs and the extent of cost control under fundholding. However, it is worth remarking, with respect to the last point above, that fewer drugs prescribed means cheaper, but not necessarily better, health care. For example, there is at present a concern that the prevailing drive for cost-cutting in prescribing is discouraging GPs from adopting the newer, frequently more expensive, medicines. In comparison with the traditional alternatives, the new drugs appear to offer an improved therapeutic potential. From the NHS point of view, the use of such more expensive drugs could well prove cost-effective overall, if they reduce the need for hospital admission.^{23,24} Unfortunately, the data used in this cost analysis do not permit us to determine exactly which drugs are, or are not, being prescribed by the Lincolnshire GPs. Only an analysis at this extreme micro-level, coupled with long-term morbidity, patient satisfaction and hospital referral evidence, will demonstrate whether prescribing cost economies really are in the community's best interests.

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